CLASS

Comprehensive Large Array-data Stewardship System

Users' Conference

Design Plans and Options Under Consideration

Doug Zirkle

CLASS SET chair

CLASS LTAT member

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Agenda

- Introduction

- Planned Enhancements

- Architectural Support

Introduction

Architecture and Design Influencers

- CLASS
  - PM: Program Management
  - CPMT: CLASS Project Management Team
  - SET: System Engineering Team
  - LTAT: Long-Term Architecture Team
- ARWG: Archive Requirements Working Group
- User Community
- NOAA/NESDIS Management
- Current implementation

Current Deployment & Short-Term Plans

- "Type 1" (complete) archive nodes
  - Current: Suitland, Asheville
  - Suitland → Boulder: early 2006
- "Type 2" (partial) archive nodes
  - Fairmont (EOS?), middle of 2006
  - Suitland, prior to NPP
- Development and integration test nodes
  - Current: Suitland, Fairmont (dev only)
  - Consolidated at Suitland, late 2005
- Note: *Node Study* draft August, 2005

LTA (Long-Term Architecture)

- *CLASS Architecture Study Report* completed February, 2003
- LTA will update and extend *Architecture Study Report*
  - Flesh out logical and physical architecture
  - Develop transition plan
- *Architectural Overview*: February, 2006
- *Transition Plan*: June, 2006
- *Architectural Reference Manual*: January, 2007

"Perspective" for this Discussion

- Architectural capabilities vs. implementation
- Mechanisms vs. policy

- Architectural viewpoint: managing change

- *Not a "real-time" system; no plans to become so*

Planned Enhancements

Planned Enhancements (1)

- Automated interactions via APIs

- Reprocessing support

- Enhanced QA support

- Greatly enhanced metadata support
  - Pervasive standards conformance, e.g.:
    - FGDC
    - ISO
    - Z39.50
  - Interfaces with additional metadata systems
  - "Rich Inventory"

Planned Enhancements (2)

- Fulfillment processing support
  - More format & content conversions
  - More re-sampling alternatives
  - Better sub-setting capabilities
  - Super-setting
  - Composition
- On-the-fly processing
- Security
  - Digital signatures
  - Encryption
- Tools
- Processing software

Planned Enhancements (3)

- Enhanced geospatial capabilities
- New campaigns
  - NPP/NPOESS
  - EOS
  - NEXRAD
  - *In-situ?*
- External repository support
- Large data volumes
  - Transport
 - Management

Architectural Support

Standards

- OAIS Reference Model

- Data formats

- Transport/interoperability: OPeNDAP, etc.

- Geospatial (e.g., OGC)

- APIs: Web services for now

- Other …

"Processing" Subsystem

- Differentiate CLASS, ADS (Archive & Distribution Subsystem)

- Co-locate processing with data for certain high-volume or critical activities, e.g.:

  – Reprocessing

  – QA

- *Not a generic hosting capability*

Processing Subsystem Illustration
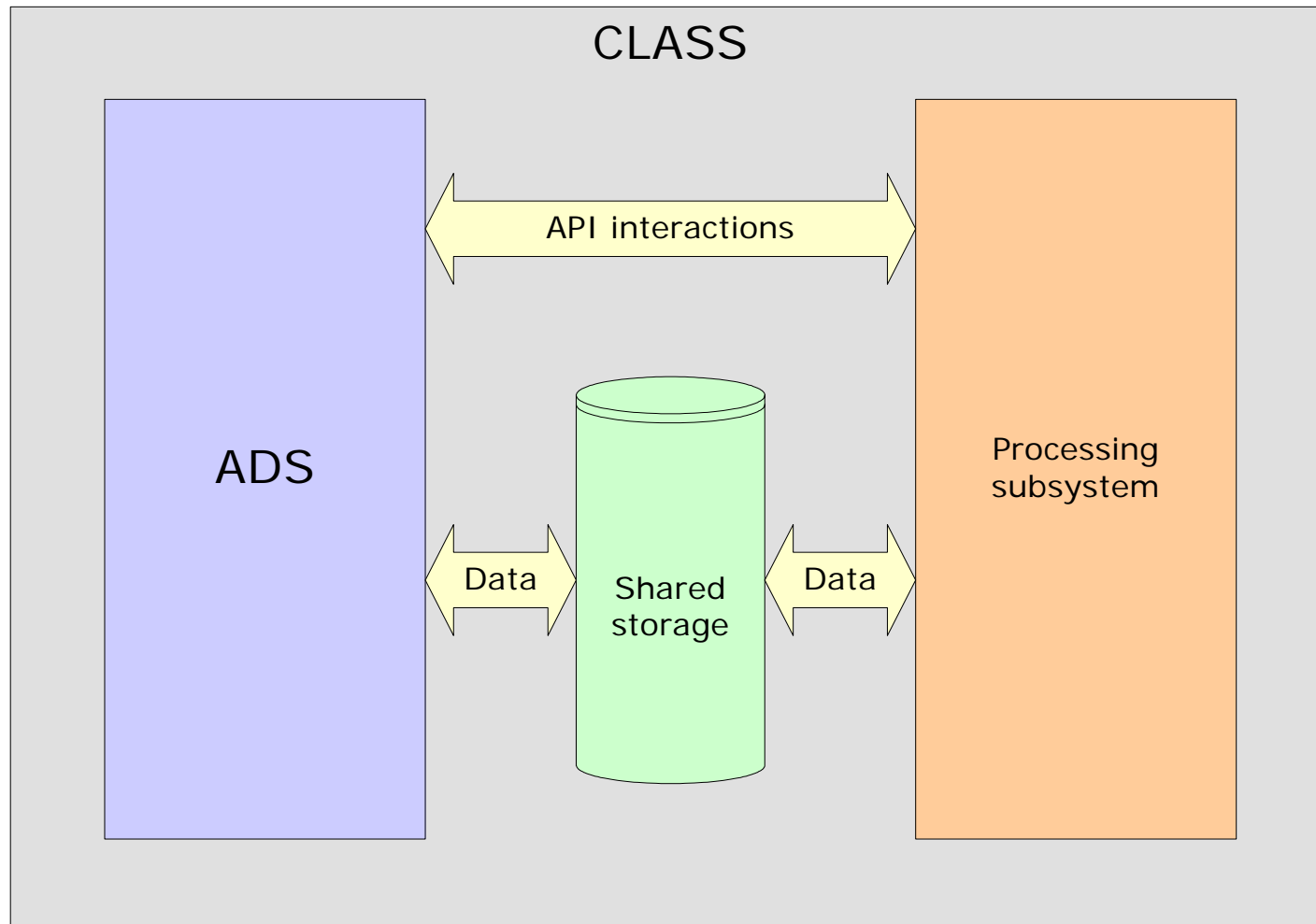
Note: External APIs not shown

Selected Architecture/Design Features (1)

- Public and private APIs
- Move toward classic distributed model
  - Concurrency
  - Transparency
  - Partial failure
  - Dynamic, incremental change
- Increased network, resource management efforts
- Stronger emphasis on portability

Selected Architecture/Design Features (2)

- Finer-grained modularity
    - Application level, e.g.:
        - Receipt, acceptance, ingest, archive
        - Delivery vs. "Will call"
    - Component level, e.g.:
        - Transport
        - Storage
- Combination of preceding factors leads to:
    - More flexibility in node deployment
    - Reduction in deployment and operation costs
    - Optimization and customization by configuration

Closing

Questions/Discussion?

Thank you!